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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/518,399	12/17/2004	Tomohisa Arai	017447-0186	8095
22428 7590 12/27/2007 FOLEY AND LARDNER LLP SUITE 500 3000 K STREET NW WASHINGTON, DC 20007			EXAMINER HALL, ASHA J	
			ART UNIT 1795	PAPER NUMBER
			MAIL DATE 12/27/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/518,399

Applicant(s)

ARAI ET AL.

Examiner

Asha Hall

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date December 17, 2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Iwata et al. (US 5,724,818).

In regard to claim 1, Iwata et al. discloses thermoelectric element, comprising:

- Figure 5 discloses a thermoelectric element from a prior art that depicts a thermoelectric semiconductor group having N type thermoelectric semiconductors (51) and P type thermoelectric semiconductors (52) and heat absorbing electrodes (56) joined to one end part of said thermoelectric semiconductor group (col. 1; lines: 21-35);
- Figure 5 depicts a heat radiating electrodes (54) joined to the other end part of said thermoelectric semiconductor group (51, 52) so that at least parts of said N type thermoelectric semiconductors (51) and said P type thermoelectric semiconductors (52) are alternately connected in series (col. 1; lines: 21-25);
- Figure 5 depicts a heat transmitting members/radiating fin (57) integrally provided to the respective heat absorbing electrodes (56) and heat radiating

electrodes(54), disposed to be in contact with a cooling medium/air (the radiating fins are exposed to the air col. 1; lines: 42-43) and having a function of radiating heat to said cooling medium (col. 1; lines: 45-54).

In regard to claim 2, Iwata et al. discloses the thermoelectric element according to claim 1, wherein said heat absorbing electrodes (54) are attached to an object to be cooled to be electrically insulated (col. 1; lines: 45-49 & col. 2; lines: 3-7), and heat of said object to be cooled in a state in which said thermoelectric element (51,52) is not energized is radiated to said cooling medium/air via said heat absorbing electrodes (56) and said heat transmitting members/radiating fin (57).

As to claim 3, Iwata et al. discloses the thermoelectric element according to claim 1, wherein said heat transmitting members/radiating fin (57) provided at said heat absorbing electrodes (54) are attached to an object to be cooled to be electrically insulated (col. 1; lines: 42-49), and have a function of directly radiating heat to said cooling medium/outside air and a function as part of said heat absorbing electrodes(54) in combination, and heat of said object to be cooled is radiated to said cooling medium/outside air via said heat transmitting members/radiating fin (57) in a state in which said thermoelectric element is not energized (col. 1; lines: 41-49). It is well known to those skilled in the art that the heat from the transmitting member can be dissipated once the thermoelectric element is switched off.

With respect to claim 4, Iwata et al. discloses the thermoelectric element according to claim 1, wherein in said heat transmitting member/radiating fin (57)

provided at said

heat absorbing electrode (54), a region/above the radiating fin (57) for radiating heat to said cooling medium/outside air exists at a position far from a cooling surface of said thermoelectric semiconductor group (51, 52) seen from an object/electronic device (58) to be cooled as shown in Figure 5.

In regard to claim 5, Iwata et al. discloses the thermoelectric element according to claim 1, wherein in said heat transmitting member/radiating fin (57) provided at said heat absorbing electrode(54), as shown in Figure 5 a region for radiating heat/above the radiating fin (57) to said cooling medium/outside/air exists between an object to be cooled (58) and a cooling surface/radiation (i.e emit heat) side of the insulating substrate (53) of said thermoelectric semiconductor group (51, 52) (col 1; lines: 46-49).

In regard to claim 6, Iwata et al. discloses a thermoelectric element, comprising:
a support member;

- Figure 5 depicts a thermoelectric semiconductor group having N type thermoelectric semiconductors (51) and P type thermoelectric semiconductors (52) arranged along said support member/substrate (55) and heat absorbing electrodes (56) joined to one end part of said thermoelectric semiconductor group (col. 1; lines: 21-35);
- Figure 5 depicts a heat radiating electrodes (54) joined to the other end part of said thermoelectric semiconductor group (51, 52) so that at least parts of said N

type thermoelectric semiconductors (51) and said P type thermoelectric semiconductors (52) are alternately connected in series(col. 1; lines: 21-25);

- Figure 5 depicts a heat transmitting members/radiating fin (57) integrally provided to protrude to a radiation space/outside (col. 1; lines: 42-43);
- Figure 1 depicts the heat transmitting members (11a) integrally provided to said heat radiating electrodes (11) (col. 8; lines: 49-55), and provided and second heat transmitting members/middle radiating fin (57) integrally provided to said heat absorbing electrodes (15) (col.8; lines: 11-14 & 28-30), and provided to protrude to said radiation space/ in a same direction as said first heat transmitting members as shown in Figure 1.

In regard to claim 7, Iwata et al. discloses the thermoelectric element according to claim 6, wherein said support member is constituted of an electrical insulator (col. 7; lines: 1-5 & col. 8; lines: 32-35), and is a heat absorbing support member (22) constituting a contact part with an object (18) to be cooled as shown in Figure 1.

With respect to claim 8, Iwata et al. discloses the thermoelectric element according to claim 7, wherein said second heat transmitting members/middle radiating fin (11a) function as a heat radiating medium (col. 7; lines: 65-67) for dissipating heat of said object (18) to be cooled into said radiation space when said thermoelectric element is not in operation (col. 1; lines: 35-42). It is well known to those skilled in the art that the

heat from the transmitting member can be dissipated once the thermoelectric element is switched off.

As to claim 9, Iwata et al. discloses the thermoelectric element according to claim 6, further comprising: as shown in Figure 1 a heat absorbing member (22) connected to end portions at an opposite side from said heat absorbing electrodes (15) (col. 7; lines:4-6), of said second heat transmitting members to be capable of transmitting heat (col. 8; lines: 50-53), wherein said heat absorbing member (22) constitutes a contact part with an object to be cooled (18).

In regard to claim 10, Iwata et al. discloses the thermoelectric element according to claim 9, wherein said second heat transmitting members/middle radiating fin (11a) have a function as a heat transmitting medium from said heat absorbing member (22) to said heat absorbing electrode (15), and a function as a heat radiating medium from said heat absorbing member (22) to said heat radiation space/air (col. 8; lines: 4-11 & 49-52 and col. 7; lines: 65-67).

With respect to claim 11, Iwata et al. discloses the thermoelectric element according to claim 10, wherein said second heat transmitting members/middle radiating fin (11a) function as a heat radiating medium for dissipating heat of said object (18) to be cooled into said radiation space/air when said thermoelectric element is not in operation (col. 6; lines: 5-10 and col. 8; lines: 4-11).

In regard to claim 12, Iwata et al. discloses a thermoelectric element, comprising:
a support member;

- Figure 5 depicts a thermoelectric semiconductor group having N type thermoelectric semiconductors (51) and P type thermoelectric semiconductors (52) arranged along said support member/substrate (55) and heat absorbing electrodes (56) joined to one end part of said thermoelectric semiconductor group (col. 1; lines: 21-35);
- Figure 5 depicts a heat radiating electrodes (54) joined to the other end part of said thermoelectric semiconductor group (51, 52) so that at least parts of said N type thermoelectric semiconductors (51) and said P type thermoelectric semiconductors (52) are alternately connected in series(col. 1; lines: 21-25);
- Figure 1 depicts a first heat transmitting members (11a) (col. 8; lines: 6-11) integrally provided to said heat radiating electrodes (11b) (col. 8; lines: 52-55), and provided to protrude outside said heat radiating electrodes to be located at a first radiation space/air;
- Figure 1 depicts a second heat transmitting members/middle radiator fin (11a) integrally provided to said heat absorbing electrodes (15), and provided to protrude outside said heat absorbing electrodes to be located in a second radiation space/outside/air;
- Figure 1 depicts a heat absorbing member connected to end portions at an opposite side from said heat absorbing electrodes (15), of said second heat transmitting members/middle radiator fin (11a) to be capable of transmitting heat,

and constituting a contact part with an object (18) to be cooled (col. 6; lines: 5-10 and col. 8; lines: 4-11).

In regard to claim 13, Iwata et al. discloses the thermoelectric element according to claim 12, wherein said second heat transmitting members/middle radiating fin (11a) have a function as a heat transmitting medium from said heat absorbing member (22) to said heat absorbing electrode (15), and a function as a heat radiating medium from said heat absorbing member (22) to said heat radiation space/air (col. 8; lines: 4-11 & 49-52 and col. 7; lines: 65-67).

With respect to claim 14, Iwata et al. discloses the thermoelectric element according to claim 13, wherein said second heat transmitting members/middle radiating fin (11a) function as a heat radiating medium for dissipating heat of said object (18) to be cooled into said radiation space/air when said thermoelectric element is not in operation (col. 6; lines: 5-10 and col. 8; lines: 4-11).

As to claim 15, Iwata et al. disclose an electronic component module (col.1; lines: 7-12), comprising: a component (58) to be cooled; and a thermoelectric element according to claim 1 mounted on said component to be cooled as shown in Figure 5.

In regard to claim 16, Iwata et al. discloses an electronic component module (col.1; lines: 7-12), comprising: a component (18) to be cooled; and a thermoelectric element according to claim 7 mounted on said component to be cooled so that said component (18) to be cooled and said heat absorbing support member (22) are in contact with each other as shown in Figure 1.

With respect to claim 17, Iwata et al. discloses a portable electronic apparatus, comprising an electronic component module according to claim 15 (col. 7; lines: 46-51). Iwata et al. disclose that the electronic device in which the heat is to be absorbed includes examples such as central processing unit (CPU), microprocessor unit (MPU), a transistor, an integrated circuit (IC), and a light emitting diode (LED). It is well known to those skilled in the art that an MPU, a transistor, IC, and LED are inside of portable electronic devices.

As to claim 18, Iwata et al. discloses a portable electronic apparatus, comprising and electronic component module according to claim 16 (col. 7; lines: 46-51). Iwata et al. disclose that the electronic device in which the heat is to be absorbed includes examples such as central processing unit (CPU), microprocessor unit (MPU), a transistor, an integrated circuit (IC), and a light emitting diode (LED). It is well known to those skilled in the art that an MPU, a transistor, IC, and LED are inside of portable electronic devices.

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Asha Hall whose telephone number is 571-272-9812. The examiner can normally be reached on Monday-Thursday 8:30-7:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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AJH



ALEXA D. NECKEL
SUPERVISORY PATENT EXAMINER